Behavioural Finance Theories Effecting on Individual Investor's Decision-Making

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1.0 Introduction

1.1 Background and context to this study

The author of this dissertation chose the topic of behavioural finance theories for the reason of studying the controversial relevance of these theories in relation to investment strategies. Reading investment books and newspaper articles has been a part of the writers' daily life for many years. Hence, the writer's interest towards investment strategies and behavioural finance theories has grown over time. Behavioural theories are seen as a relatively new phenomenon in the security markets. Therefore, examining the subject is essential in order to understand the changing world of investments.

In today's world investing in stocks and funds is made easy. Investors do not need any specific education or knowledge in order to purchase stocks. Current technology enhances fast trade between individual investors. The concept of investing is seen as trendy. Therefore, people have a tendency to make illogical decisions not based on true knowledge or information of a certain investment object. These decisions are explained via several behavioural finance theories. The outcome of poor knowledge is that investors allow these theories to effect on their decision-making process, thus resulting in major losses. The behavioural models can effect on individuals' decision-making whether actual investments are conducted via professionals or not.

The concept of investing is extensive as it can include all the aspects of purchasing items expected to gain more value in the future (art, antique, securities etc.). Therefore, the author has decided to narrow down the subject to concentrate on stock trading and the impact of behavioural finance on individual investors and money markets. The concept of money markets is misleading as the market itself does not consist of cash, but objectives having high liquidity are therefore referred to as money.

1.2 Aims of this dissertation

The core aim of this dissertation is to study the correlations of major stock investment strategies and the most common behavioural finance models effecting on investor behaviour. The relevant behavioural finance models addressed in this dissertation are Anchoring Theory, Herding Theory, Prospect Theory and Regret Theory (hereafter may be referred to as Regret Aversion). They are introduced more precisely on the 2. Chapter Literature review. In order to reach the target the aim is divided into three minor objectives.

- The first objective of this paper is to reveal the main issues of individual stock investors and examine whether they may be explained with the four behavioural finance theories mentioned above. As the articles provided to introduce the subject of behavioural finance demonstrated on the previous section, there is significant evidence major investor issues are related to psychological aspects of investing.

- The second objective of this dissertation is to expose the implications of individual stock investors being affected by behavioural finance models. This study is divided into two parts. The first part examines the effect of illogical investor behaviour on money markets. The second part focuses on how poor decision-making effects on an individual level and whether it has an impact on the future investment decisions in terms of compounding misleading information.

- The third objective addressed is studying whether there are any positive correlations between major stock investment strategies and behavioural finance theories. There are major gaps in the research in the area of interpreting the effect of behavioural finance models on investors apply-

ing a certain type of investment strategy. Therefore, the author decided to conduct a 10 question survey published on a beginner investor web page *Investor Posts*. The target of the survey is uneducated individual investors. The survey does not reveal the core purpose of the study to the target group. The reason for this is to prevent any influence such information may have on the respondents.

1.3 Rationale of the study

The concept of behavioural finance theories is relatively new and complex. The amount of existing studies is limited. However, behavioural finance has a major impact on peoples' everyday decisions regarding their purchasing habits. In the field of investments the direct and indirect implications of behavioural finance are remarkably strong. Therefore, examining investor behaviour in order to understand the fluctuations of money markets is essential. This information may provide significant advantages in the future.

The author of this dissertation is an uneducated investor. Examining the issue from her own perspective is expected to provide useful knowledge for the future investment decisions. Studying the correlations of investment strategies and behavioural finance theories enhances uneducated investors to be aware of the issues related to the investment strategy they have implemented. In the long-term identifying these issues may ease the distortions on money markets.

1.4 Limitations

This paper does not cover behavioural finance models concerning corporations' investment strategies. A majority of large and medium sized corporations invest their funds via several channels. Therefore, the decision-making process of large companies is more complex as there are a large number of people involved.

The target of the research conducted is mainly limited to uneducated stock investors. The second objective of exposing the implications of irrational investment behaviour also examines the overall impact of behavioural finance on money markets. When examining the first and the third objective the money market perspective will be excluded.

1.5 Methodology

Major parts of the research are conducted based on a comprehensive study of books and articles concerning investment strategies and behavioural finance theories. The study of the first and second objectives of the dissertation will be based on qualitative research methods in order to understand the behavioural theories effecting on individuals decision-making processes. The main focus of the third objective is on semi-quantitative research methods. The reason for this is to successfully link certain investment strategies and behavioural models in order to reach the main aim of this dissertation. The Terminology applied in this dissertation is provided in Appendix (A).

1.6 Summary

The actual study of this dissertation is presented in the following four chapters. Chapter 2 introduces the literature used as a basis for the primary research. Chapter 3 details the methodology implemented in the survey. Chapter 4 analyses the results of the study and Chapter 5 concludes the findings of this paper.

2.0 Literature Review

2.1 Introduction

The following chapter provides research material used as a basis for achieving the aim of this dissertation. The material is divided into four sub-headings to logically construct the path towards the main objective of examining the existing studies of correlations between investment strategies and behavioural finance theories. These sub-headings provide information of the theoretical and empirical studies conducted on the area of examination. Section *2.2 Previous work on behavioural finance theories on investment perspective* concentrates on providing the necessary background information for the study. The overall objectives presented as sub-headings in this chapter were firstly to discuss individual investor issues and their relation on behavioural finance theories. The second part examines the implications of irrational investor behaviour on money markets and individual perspective. The third part provides the minor existing research conducted in the area of behavioural finance theories' effect on particular investment strategies.

This chapter justifies the rationale of the study. The material presented was used to set limitations to the methodology in Chapter 3. Behavioural finance theories studied in this chapter are limited to Herding Theory, Anchoring Theory, Prospect Theory and Regret Theory.

2.2 Previous work on behavioural finance theories from an investment perspective

The association between behavioural finance and investment strategies is disputed since the psychological aspect of investing questions the Efficient Market Hypothesis (hereafter may be referred to as EMH). EMH has a major impact on profitability of the money market. The more efficient the market is, the less probable it is for an investor to benefit from other investors' miscalculations

(Uronen, 2013). The Efficient Market Hypothesis and behavioural theories are strongly negatively correlated as one excludes the other.

The issue of behavioural finance theories has become more prevalent during the past two decades. Investors have only recently acknowledged their poor decision-making has originated from the psychological aspect of investing. Catherine New (2011) introduces the example of Dr. Maggie Baker who wanted to gain more profit with her investments in the mid-1990s. She allocated the majority of her stocks to the technology sector, which had grown its popularity amongst investors. However, the price bubble of the technology sector broke in the beginning of January 2000. Dr. Baker lost the majority of the value of her investments. She claims behavioural finance theories controlled her decision making. Therefore, she made an error of judgement.

Economic bubbles have constantly threatened the world. The on-going recession is a direct cause of the credit and housing bubble of the mid-2000s. Examining these bubbles in the context of behavioural finance may aid in the avoidance of major economic disasters in the future (Grapher, 2012). Especially now in the midst of an on-going recession many investors question their investment logic and decision-making abilities. The majority of investors with or without relevant education are intelligent people. However, these past years have destroyed their self-confidence. Loss-making investors are desperate to know the reason for this. Behavioural finance is the key for interpreting investor behaviour that leads to financial crisis (Statman, 2009).

2.3 Individual investor issues and their relation on behavioural finance theories

The first articles concerning the psychological aspect of investing were published 1979. However, the concept of behavioural finance theories has remained relatively unknown ever since (Polak, 2012:55). Economists have trusted in the Efficient Market Hypothesis for a long time and have just recently admitted to investors having irrational aspects in their investment decision-making behav-

iour (Weinberg, 2005:1). Several journalists have studied the illogical aspects of investor decision-making. Many of these journalists have implemented behavioural finance theories to explain the irrationality of small investors. However, their perspectives differ. The first part of this section concentrates on identifying the major issues individual investors face. The latter discusses the relation of their issues on the four behavioural finance theories used for interpreting illogical decision-making of investors in this paper.

2.3.1 Major issues of individual investors

According to Jing Chen (2011) individual investors are probable to face more issues trying to make rational decisions regarding their investments than larger entities. Large investors have more resources to gain crucial information regarding their investment objectives. Processing financial information is difficult for small investors. Therefore, individual investors face more issues on making rational decisions than large organisations. Small investors may not have all the relevant data for rapid and logical decision-making. The amount of data concerning financial instruments is enormous (Lu, 2010:485). Finkelstein and Greenwald (2009:48) suggest it is not only the lack of crucial data that is effecting on investors. The impatience of uneducated investors has grown over time. According to their research, the fund holding periods of American citizens declined from 3.75 years to 2.4 years between 1992 and 2000. This phenomenon is called "chasing returns". Instead of following their original investment plan, investors make rushed decisions and tend to invest in trendy market areas.

As the evidence above demonstrates, it is essential to acknowledge experience as a crucial factor effecting on individual investor’s decision-making processes. Experienced investors are probable to consider corporate governance as an important factor when evaluating a company’s future development. Less-experienced investors rely on financial information (Chang, Wei, 2010:139). Polak

(2012:55) suggests a minority of financial theories acknowledge more experienced investors' ability to utilize the information more efficiently than beginners. He raises the issue of individual investors being misled by invalid information.

An older publication of Cohen, Zinbart and Zeikel (1977:734) suggests the major problems of investors are deeper than in the right application of financial data or impatient behaviour. They clarify the importance of determining one's investment objectives and remind that unfortunately individual investors have major issues on articulating their investment objectives with accuracy and consistency. According to their theory an individual creating a strategy is demonstrating clear understanding over the objectives and risks of the asset. This type of investor is not as probable to act irrationally. Simple mistakes at the implementing stage of the strategy often lead to major catastrophes (Cohen, Zinbart and Zeikel 1977:734; Rutterford, 1993:255). For a rational investor the next step after creating a strategy is to decide the optimal portfolio of securities. In order to protect the portfolio from major volatility it is essential to purchase securities having negative correlation to each other. This seems simple in theory, but investors often make irrational decisions regarding their portfolio in the long-term (Rutterford, 1993:255).

As stated at the beginning of this section, there are various opinions concerning the worst errors of judgement small investors make after implementing their investment strategies. According to Ivo Welch (2000:369) some investors rationalize their decision-making based on the fact that other investors are purchasing the same stocks. Relying on other peoples' decision-making creates a feeling of security for investors. It suggests that their decisions are creating profit because it is a public opinion that a certain stock will bring value to the owner. Ranjit Singh (2009:89) claims there are two common mistakes investors make. The first is the irrational obsession of holding on to value-losing securities while selling the profitable ones. The second is simply excessive trading of securities. Sudhir Singh (2012:116) partly disagrees with the views of the two authors provided above. He

suggests the most common mistake of uneducated investors is to rely on the most recent information received. This type of information is often found from magazines and the Internet. Therefore, it is to be treated as invalid. One important approach on irrational investment behaviour is to consider the decision-making of investors after they have implemented their strategies. Irrational behaviour after losses or gains may be compounded into even more illogical behaviour in the future. Investors have a tendency of avoiding the painful feeling of making losses. Therefore, they may hold their value losing securities in order to avoid converting their assets into cash.

2.3.2 The approach of behavioural finance theories

Perspectives regarding the application of behavioural finance theories amongst investment journalists and researchers differ. The oldest publications of Cohen, Zinbart and Zeikel (1977:734) and Rutherford (1993:255) strongly suggest that since the issues of individual investors are not related to the actual strategy but to the implementation stage, it is not necessary to interpret investor behaviour via behavioural finance theories. However, according to EMH all the security prices reflect all the available information concerning certain company's financial assets (Welch, 2000:369). Since the security prices on money markets deviate from their fundamental values, it is logical to assume EMH may not cover all the aspects of investing (Welch, 2000:369; Hott, 2009:35). Robert J. Schiller (2003:83) questions the Efficient Market Hypothesis as an insufficient theory. He proposes additional theories are needed in order to interpret investor behaviour and money markets. Behavioural finance theories are applied to understand the deviation of the actual value of a certain stock based on company financial information and the market price determined by individuals.

As Welch (2000:369) discussed in section *2.2.1 Major issues of individual investors*, many investors have a habit of relying on other investors' opinions. Hott (2009:35) suggests that decisions made by one investor that are influenced by the decisions of other investors are affected by herding

behaviour. Therefore, all the investment decisions that are not solely based on the financial information of a certain corporation or a field of industry are to be interpreted via Herding Theory.

According to a survey involving 300 Scandinavian financial market professionals and 213 university students, there is a significant difference in the ability to process information between educated and uneducated investors. The survey revealed that students have a tendency of anchoring when it concerns their long-term stock return expectations (Kaustia, Alho, Puttonen, 2008:381). Anchoring Theory is applied when an investor values recent information over a company's historical data. Uneducated investors are most probable to have anchoring tendencies. The information used for decision-making is often gained from unofficial sources (magazines, web sites etc.) (Singh, 2012:116).

Finkelstein and Greenwald (2009:48) claim that a majority of irrational behaviour is explained by fear and greed. The common advice for investors is to buy low and sell high. However, average investors have tendencies on acting exactly opposite. They are purchasing only trendy stocks. In many cases trendy stocks rapidly lose their value. When this occurs investors hold on to their value-losing securities until they cannot withstand the pressure. The irrational act is to sell value losing securities for an unprofitable price. In the example mentioned above, the correct solution is to hold the value losing stock and invest more in them. In the long-term this type of thinking will be beneficial to the investors as their investments will gain value.

The example provided above logically describes the consequences of herding behaviour. Purchasing stocks for their trendiness is highly irrational decision-making. This type of behaviour will not create profit. The inevitable consequence of herding behaviour is regret. Investors unsure of their decisions make major efforts to convince themselves that the purchasing decision was justified (Finkelstein, Greenwald, 2009:48). According to Sudhir Singh (2012:116) and Ranjit Singh (2009:89) an illogical tendency on keeping value-losing securities is to be interpreted via Regret Theory. According to Regret Aversion, investors avoid the painful feeling of making losses. Therefore, they try to

hold their value losing securities in order to avoid converting their assets into cash. After making poor investment decisions investors may avoid certain industries that have performed poorly or caused them losses in the past. Regret Aversion is often linked to Herding Theory (Singh, 2012:116; Lawlor, 2009).

According to Welch (2000:369), recommendations of one professional analyst have a significant positive correlation to the recommendations of the next two ones. He also states the figure of speech professional advisors implement has a major impact on the actions of their customers. Explaining investment opportunities in terms of gains creates confidence in their listeners. Ranjit Singh (2009:89) proposes Prospect Theory to interpret this type of investor behaviour. According to Prospect Theory investors place a different value on gains than losses. Studies have proven that people do not appreciate £1 gains on the same level as they distress about the losses of a similar amount. Investors have a tendency on reacting differently on an equivalent investment opportunity depending on whether it is explained in the context of gaining or losing money. Research has demonstrated investors are more willing to take risks in order to prevent losses than to gain profit. Understanding the consequences of Prospect Theory effecting on individuals is essential.

2.4 The implications of irrational investor behaviour

The research conducted to achieve the second objective is divided into two parts. The first part examines the effect behavioural finance theories have on the money markets. This part studies the implications of irrational investor behaviour that may be acknowledged from a money market perspective. The focus of the latter part is on studying the impact of illogical investor behaviour on investors themselves. This part examines whether investors suffer from the consequences of their previous irrational decision-making.

2.4.1 Money market perspective

The majority of economic journalists and researchers agree that illogical investment behaviour is effecting on money markets. However, the opinions regarding the level of impact and the nature of it vary. The largest issue irrational investment decision-making causes is money market distortions (Shleifer, 2000:196; Shiller, 2003:83; Welch, 2000:369; Lu, 2010:485; Singh, 2012:116; Lawlor, 2009). Especially herding behaviour is concluded to cause a chain of misleading information fuelling the anomalies on money markets. It causes a "snowball-effect" that is difficult to stop (Welch, 2000:369). According to Christian Hott (2009:35) stock price bubbles are mainly caused by herding behaviour. However, herding behaviour is not the only behavioural model applied to explain the stock market anomalies. Sudhir Singh (2012:116) reminds of the importance of Anchoring and Regret theories when interpreting money market distortions. It is impossible to interpret all market anomalies with only one theory. Anchoring Theory and Regret Aversion are highly important to revealing the causes of stock price bubbles. However, journal articles of Singh and Hott fail to explain how the theories mentioned above are to be applied in order to interpret money market inefficiencies.

Joshua Weinberg (2005:1) claims in his article *'A New theory of behavioural finance'* that money market distortions are actually positive. He introduces Andrew W. Los' theory concerning the Efficient Market Hypothesis. Los' theory simply suggests that money markets require a portion of irrationality in order to function properly. According to the theory, market efficiency is dependent on various factors. Therefore, money market distortions are impossible to mitigate. Robert J. Shiller (2003:83) questions EMH on the basis of the theory failing to provide information regarding money market inefficiencies. Behavioural finance theories are to be applied on the side of EMH in order to form a clear picture of money market functions.

Distortions on money markets may not be noticed immediately. Therefore, it is difficult to evaluate and link the reasons that lead to these anomalies (Welch, 2000:369). The fact that the majority of studies and researcher opinions are based on assumption complicates the task even more. Associations between certain behavioural finance theories distort the pattern leading to money market anomalies. For example, Regret Theory may be compounded to herding behaviour in investment decisions. Various behavioural finance theories form a pattern of investor behaviour concluding to less profitable decision-making. This pattern causes inefficiencies on money markets (Lawlor, 2009).

2.4.2 Individual level

The majority of implications of illogical decision-making on an individual level are interpreted on negative perspective. As stated on the section *2.3.2 The approach of behavioural finance theories*, the chain of misleading information is difficult to end. The opinions of one investment advisor effect on the recommendations of the next one. It is in the nature of humans to absorb information from the world around them. Herding behaviour may be compounded even amongst professional investors. It is logical to assume uneducated investors are suffering a major part of the consequences (Welch, 2000:369).

Lei Lu (2010:485) discusses in his article *'Asset pricing and welfare analysis with bounded rational investors'* how educated investors may benefit from the poor decision-making of uneducated ones. The article introduces a term 'bounded rational investors'. The term refers to investors allowing behavioural finance models to effect on their decision-making. The article provides a model explaining how rational investors may benefit from the trade with bounded rational investors.

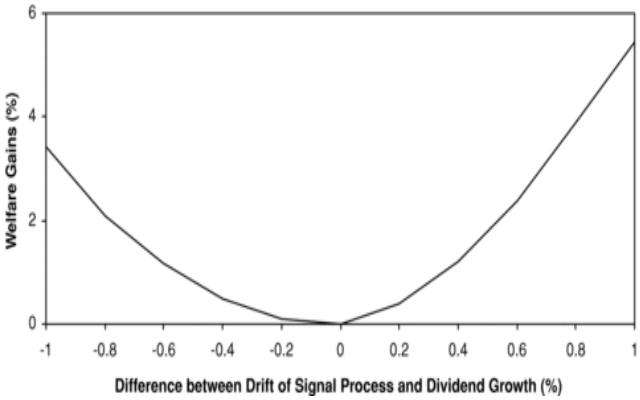


Table 1. Welfare Analysis (Lu, 2010:485)

Table 1. illustrates the rational investor's welfare gains against the difference between irrational investor's drift of signal process and dividend growth. It demonstrates how rational investors gain more profit when the percentage difference between drift of signal process and dividend growth is positive or negative. According to Lus' model rational investors benefit from the irrational decisions of bounded rational investors.

On *Table 1.* provided above, the drift of signal process measures the price of a certain stock as defined by investors. Dividend growth illustrates the actual growth or decline of the value of the stock. Rational investors value the stock on the same level with dividend growth. Bounded rational investors overvalue or undervalue the stock. Their judgement is partially based on other investors' behaviour. Therefore, they value the stock on the level of the drift of signal process. The difference between drift of signal process and dividend growth measures the difference between a certain stock's market value and its actual fundamental value (Lu, 2010:485). The model of Lei Lu is an excellent tool for demonstrating the opportunity of one investor to benefit from the poor decision-making of the other. Self-education before entering the market may narrow down the gap between professional and uneducated investors (Chen, 2011).

As demonstrated above, investors lacking experience are highly probable to be abused by educated investors. In the long-term poor decision-making may destroy individual investors' motivation (Shleifer, 2000:196). The majority of the existing studies regarding the implications of behavioural finance are concentrated on Herding Theory. There are no specific models or theories regarding other behavioural finance theories.

2.5 Correlations between major investment strategies and behavioural finance theories

This field of study is relatively new. Hence, there are a small number of reliable publications concerning the subject. Earliest researchers interpreting the correlations of investment strategies and behavioural finance theories claim there is no evidence of certain behavioural finance theories' impact on certain types of strategies. In other words, there is no association between certain investment strategies and behavioural models (Cohen, Zinbart and Zeikel, 1977:734; Rutterford, 1993:255). The role of behavioural finance theories is to provide knowledge of certain factors effecting on the period of time before implementing the strategy (Rutterford, 1993:255).

The latest publications on behavioural finance have a different perspective on mapping these theories with investment strategies. As Ranjit Singh (2009:89) stated in section *2.3.1 Major issues of individual investors,* one common error in judgement of investors occurs when they refuse to sell value-losing stocks. He proposes Regret Theory to provide an explanation for the irrational tendency of holding on to unprofitable securities (Singh, 2009:89). Certain investment characteristics are associated with different types of investment strategies. The basic investment strategies are divided into three categories: fundamental analysis, technical analysis and buy-and-hold-the-market (hereafter referred to as buy and hold). Each of these categories have different characteristics and techniques on valuing stocks (Financial Web). Descriptions of these strategies are provided in Appendix (A). As certain characteristics of investment behaviour may be interpreted via certain theories it is essential to acknowledge that different strategies are probable to be exposed to different behavioural models.

After careful research of investment articles and books, the author noticed the amount of information regarding behavioural finance theories' relation on investment strategies is limited. A major part of studies concentrate on particular stages and elements of investment decision-making.

2.6 Summary

This chapter has examined the existing studies concerning behavioural finance theories from the perspective of investment decision-making. Behavioural finance theories studied in this chapter were limited to Herding Theory, Anchoring Theory, Prospect Theory and Regret Theory.

The first objective of this chapter was to study the main issues individual investors face and examine whether they may be explained via the four behavioural finance theories mentioned above. The research proved individual investor issues are associated with behavioural finance theories. The second objective was to examine the consequences of investors being affected by behavioural finance models. The study was divided into individual and money market perspectives. The results demonstrate professional investors may benefit from the poor decision-making of uneducated ones. It also revealed irrational behaviour creates serious distortions on money markets in the long-term. The third objective was to provide a basis for studying the correlations between major investment strategies and behavioural finance theories. Research illustrated the amount of studies conducted in the area is limited. Therefore, further studies in the field of behavioural finance theories' correlation on certain investment strategies are needed.

Studying the implications of behavioural finance theories demonstrated poor performance of uneducated investors may effect on the strategy implemented by professional ones. However, as there is only limited information regarding the overall aim of this paper, including compounded effect of behavioural finance theories on individual strategies is not possible. Furthermore, this type of study is assumed to provide information regarding educated investors' strategies, which is not included in the main aim of this paper. Therefore, the survey conducted focuses solely on uneducated investors. The following chapter will provide the limitations and guidelines set in preparation of the primary research conducted to achieve the aim of this dissertation.

3.0 Methodology

3.1 Introduction

As mentioned, the reason for conducting this study is the authors' personal interest in behavioural finance theories and their effect on individuals' investment behaviour. The idea of selecting the topic was based on a careful research of news and journal articles presented in Chapter 2 *Literature Review*. The basis for the study of this dissertation is presented in the same chapter. This chapter describes the methodology applied for achieving the aim of this dissertation. The following sections provide information of *3.2 Data and sources*, *3.3 Research approach*, *3.4 Methodological framework* and *3.5 Data analysis* applied in the survey. They also describe the methodological approach on 1. and 2. objectives.

3.2 Data and sources

The collection of data was conducted through primary and secondary sources. Primary data consists of a self-completion questionnaire conducted on the beginner investor web page *Investor Posts*. The purpose of the primary data collection was to gather information in order to achieve the main aim of the dissertation. As stated, the main aim of this paper is researching objective *3. Correlations between investment strategies and behavioural finance theories.* Researchers around the world have acknowledged that the Internet provides various opportunities for conducting surveys. Several types of groups and organisations meet each other online. They provide researchers with rapid access to a specific group. Often communities this large exist only on the Internet (Wright, 2005). The web page selected as a source of primary data had 12,108 members, 296,673 posts and 123,413 threads on the survey publication date of March 23rd 2013. This large number of members reflects the web

page's reliability. The survey was closed on 17th of April 2013 after 20 participants had answered the questionnaire. All invalid responses were deleted before the survey closing date.

The methods adapted in the primary research were semi-quantitative. In other words, the results of the questionnaire are to be treated as a guideline for forming patterns. Constructing a survey to measure human behaviour with quantitative or qualitative methods was not an option. Firstly, adapting quantitative methods requires a larger number of respondents. Secondly, forming patterns is not possible using qualitative methods.

Secondary data applied in this paper mainly consists of investment journals and books. The material researched provided essential theoretical and empirical knowledge of the objectives *1. Individual investor issues and their relation on behavioural finance theories* and *2. The implications of irrational investor behaviour*. Secondary data was used to provide basis for the primary research. It enhanced the formation of pattern between uneducated investor behaviour and behavioural finance theories. The information gathered on secondary research methods introduced Anchoring, Herding, Prospect and Regret theories. It justified the selection of these theories to interpret investor behaviour in this paper and revealed any interrelations and further issues they may have caused. Gathering this information was crucial in order to conduct the primary research.

The Smith Breeden Prize winning Kent Daniel, David Hirshleifer and Avanidhar Subrahmanyam conducted their primary research based on the results gained from the secondary research. The William F. Sharpe Award for Scholarship in Financial Research winning Meir Statman and Hersh Shefrin adapted similar method for their journal article (Shefrin, 2000; Danial, Hirshleifer and Subrahmanyam, 1998; Shefrin and Statman, 2000). Hence, it is justified to construct the research conducted in this paper for similar methods.

3.3 Research approach

As stated, the field of behavioural finance theories is relatively new. This has an impact on the amount and reliability of earlier studies. Therefore, the decision of research methodology was not self-evident. The author of this paper decided to use multiple methods to study the research problem. This approach is called methodological triangulation. In order to achieve the aim the research of the subject was divided into three stages. The first stage examined the main issues of individual investors and studied their relation on behavioural finance theories. The second stage revealed the consequences of irrational investor behaviour from an individual investor and money market perspective. The aim of the final stage was to form a pattern between the most common investment strategies and the four behavioural finance theories mentioned in section *1.3 Aims of this dissertation* in Chapter 1. The first and second stages were based on qualitative research methods. The examination of the third stage was executed implementing semi-quantitative research methods.

The research method of any academic work is dependent on the nature of the study (University of Wolverhampton, 2013:3). The material provided in the Chapter 2 *Literature Review* clearly highlights the gaps in the research conducted in the field of behavioural finance before this dissertation. The main aim of this paper is not to be achieved adapting only secondary research methods. In this case, it is highly encouraged to adapt primary and secondary research methods on the data collection phase (University of Wolverhampton, 2013:3).

The majority of researches concentrated on behavioural sciences are conducted using qualitative research methods. However, some exceptions exist (Olsen, 1998). The primary focus of the survey is not to examine the underlying reasons for investor irrational behaviour. The core aim of the questionnaire is to examine whether certain investment strategies are more exposed to certain behavioural finance theories than others. Quantitative research methods are used to find correlations and

"fashions" in human behaviour (Dawson, 2006:15). Hence, examining the aim of this paper requires semi-quantitative research methods.

3.4 Methodological framework

The author used methodological triangulation in order to gain all essential knowledge for the primary research objective. The following section identifies and details the framework implemented for the primary research conducted in this paper.

The selection of the major investment strategies was based on their popularity and different types of approaches. Buy and hold investors often believe in EMH and their security holding periods are long. Technical and fundamental analysis investors are the opposite of buy and hold investors. They predict market fluctuations with certain methods. Technical and fundamental analysis investors have an opposite approach to predicting money markets. Technical analysis is based on forecasting stock price fluctuations where fundamental analysis attempts to process all information effecting on stock prices (Investor Guide, 2013). In order to form a comprehensive pattern between certain investment strategies and behavioural finance, it is essential to select different investment approaches. The technical definitions of other key terms of the survey are provided in Appendix (A).

Table 2. on the next page provides a model of interconnections of the key terms.

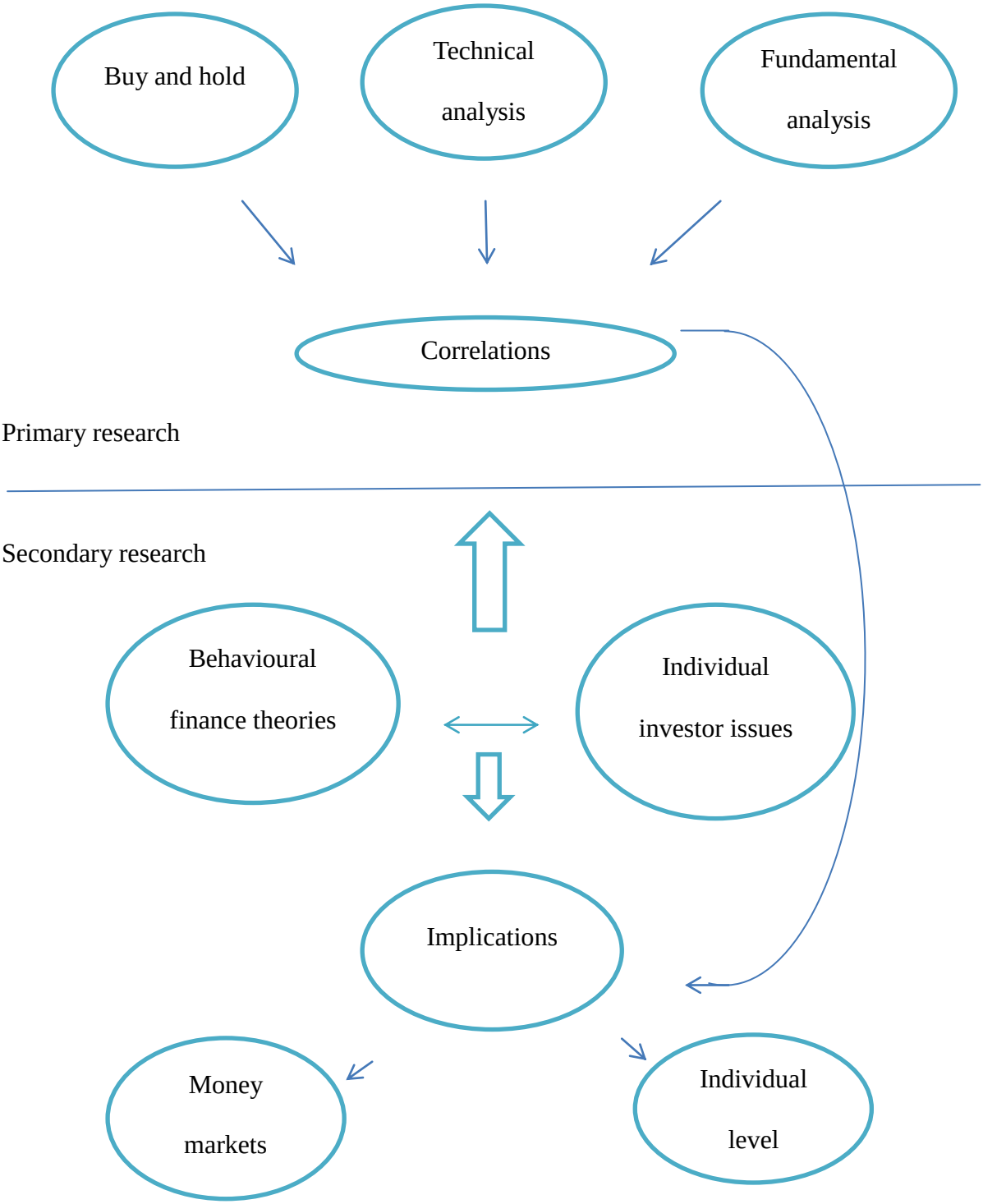


Table 2. Interconnections of the Research Stages

The self-completion survey was designed to support or controvert the linkages discovered in the secondary research phase. The self-completion questionnaire conducted and the rationale of the questions are provided in Appendix (B).

3.4.1 Sample

The target of the primary research conducted was uneducated stock investors. The source of primary data was an Internet web page *Investor Posts*. The survey was published under the heading '*Survey on Stock Investors Investment Behaviour*'. The title excluded other types of security investors. The sample size was 20 respondents. The nature of the survey required the author to examine all the respondent's answers individually. The reasons for this were to firstly form patterns between the behavioural finance models examined and secondly between these models and major investment strategies. The analysis of the results had to be approached with due care and attention. Therefore, surveying a greater number of respondents was not a viable option. However, surveying a smaller number of investors would not have provided sufficient amount of information. In order to form patterns it is essential to be able to generalize respondents' answers.

The selection of material studied in Chapter 2. *Literature Review* was based on a preliminary study of articles and books in the field of behavioural finance theories' relation on stock investment strategies. Criticism and historical analysis of the literature is a crucial part of any research conducted (Ryan, Scapens and Theobold, 2002:27). The purpose of the preliminary study was to limit the behavioural finance theories to the most relevant ones' in terms of their impact on individual stock investor's strategies. The study limited the behavioural finance models to Anchoring, Herding, Prospect and Regret theories introduced in Chapter 2. The material regarding the four theories mentioned above was gathered from various writers to ensure an inclusion of all perspectives in the complex topic.

3.4.2 Questionnaire design

The methodology used for the primary research was descriptive. Descriptive research studies are suitable for describing the characteristics of a certain individual or a group (Kothari, 2004). The survey was conducted via a semi-structured questionnaire. Behaviour can be measured in various levels. Detailed analysis is necessary for conducting certain types of studies. The cost of gaining detailed information is that higher-level patterns may not be identified. Formation of patterns is extremely difficult by analysing detailed information (Martin and Bateson, 1993:9). Therefore, the most frequently applied response category in this survey was multiple-choice questions. The heading '*Survey on Stock Investors Investment Behaviour'* was designed to appeal to the target of the primary research. An online survey is a rapid method for reaching various respondents. It does not limit the respondents to a certain geographic location. The survey was designed not to reveal the nature of the study. Respondents were not aware behavioural finance theories were applied to interpret their answers. This approach was applied in order to prevent respondents from manipulating their answers and thus the outcome of the questionnaire.

The first three questions concerned the respondent’s socio-demographic background. The remaining seven questions focused on the respondents' general investor profile. These answers provide all the crucial information of certain investors' investment behaviour. The section was applied for finding the correlations between certain types of investment strategies and Anchoring, Herding, Prospect and Regret theories. In order to gain responses the author was careful not to construct a complex questionnaire.

3.4.3 Procedure

As stated, the survey was posted onto the *Investor Posts* web page on the 23rd of March. It was posted under the heading '*Survey on Stock Investors Investment Behaviour'*. The survey was accompanied by a cover letter provided in Appendix (C). The informal tone was adapted according to the survey publication environment. The cover letter provided a link to the SurveyMonkey web page where respondents had the opportunity to answer the survey.

3.5 Data analysis

The results of the survey were gathered and processed with Microsoft Excel. Firstly, the data analysis consisted of examining the questionnaires in order to ensure the completeness of the responses. Incomplete surveys were not considered in the final results. Secondly, the data was divided into three main categories according to the investment strategy the respondent had implemented. The purpose of this was to form patterns of behaviour around certain investment strategies. Thirdly, the data connected to each investment strategy was analysed and the results were compared to each other. This procedure was mandatory in order to examine whether certain investment strategies were related to certain behavioural models.

3.6 Summary

The purpose of this chapter was to identify the methodology applied in the survey. The previous sections provided information of *3.2 Data and sources*, *3.3 Research approach, 3.4 Methodological framework* and *3.5 Data analysis* used to construct the online questionnaire. The following chapter will provide data findings and analysis based on the survey.

4.0 Findings and Analysis

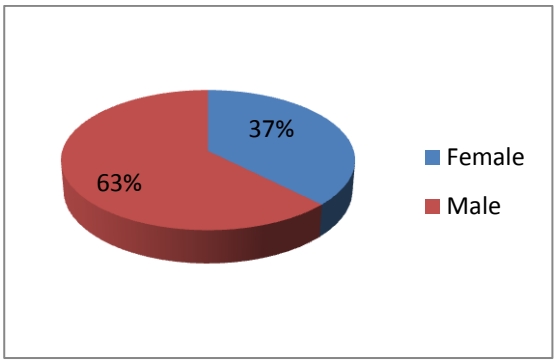
4.1 Introduction

The purpose of this chapter is to present and analyse the results for the primary research conducted in this paper. In order to logically examine the outcome of the questionnaire, the study is divided into two counter-sections. The first section *4.2 Presentation of empirical results and interpretation* provides the results of the online questionnaire. This section identifies all the correlations between the most common investment strategies and Herding, Anchoring, Prospect and Regret theories. The following section *4.3 Analyses of results* discusses the findings of the survey. It also examines whether there are any interdependencies between certain behavioural finance theories. This will be followed by a critical discussion of the findings. The links between the results of the survey and the existing literature will be studied in order to examine whether the data supports or contradicts the previous researches.

4.2 Presentation of empirical results and interpretation

This section provides the results of the survey. The statistics method applied for the presentation is descriptive. As stated in the previous chapter, the sample size was 20 respondents. The first part of the questionnaire concerned participants' socio-demographic profile. This part consisted of three questions. The latter part consisted of seven questions and focused on the investor profile and habits of the respondent.

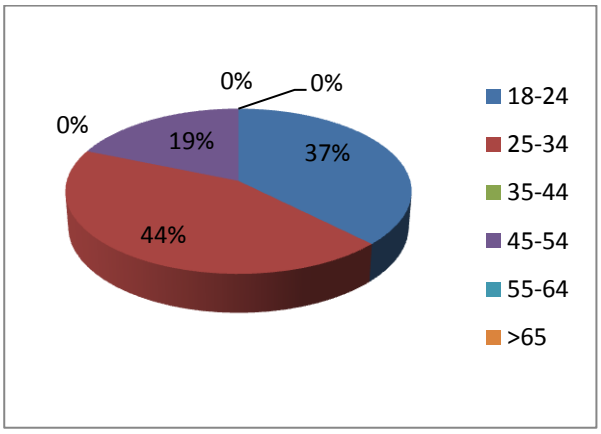
Any survey should ideally attract the same amount of males and females. However, controlling participants gender in a survey conducted over the Internet is not viable. Accordingly, respondents were not required to fill in the information. The reason for this is that investors may feel uncomfortable providing personal information for an anonymous researcher.



As *Table 3.* demonstrates 63 per cent of the respondents providing their gender were male and 37 per cent female. This equates to 10 male and 6 female participants. 6 participants denied answering the question.

Table 3. Gender Distribution

When conducting a survey on the Internet it is inevitable to mainly receive responses from the younger generation. *Table 4.* illustrates the age distribution of the participants. 81 per cent of the respondents were between 18 and 34 years old.



Only 3 respondents were older than 45. None of the participants answering the question were over 54 years old. 6 respondents refused to provide any information concerning their age.

Table 4. Age Distribution

The last socio-demographic question concerned respondents' level of education. The primary purpose of the question was to ensure that the participant does not hold a degree or a position in banking or in any equivalent level.

The distribution of respondents' educational background is demonstrated in *Table 5*. The age distribution of respondents had an impact on their current job status as in total of 47 per cent of the respondents were students from various institutions. The results equal to 9 students and 6 employees with and 4 employees without a higher education degree.

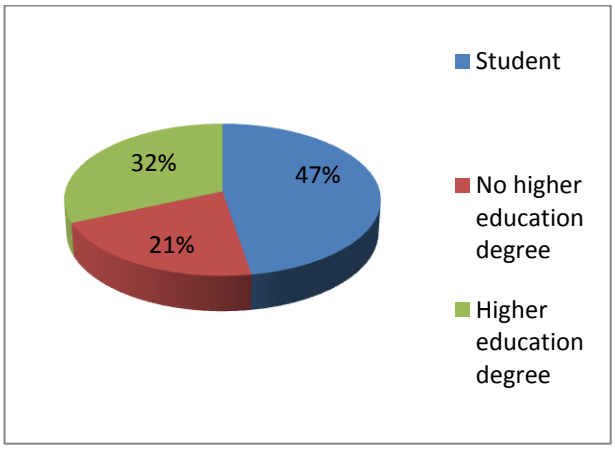
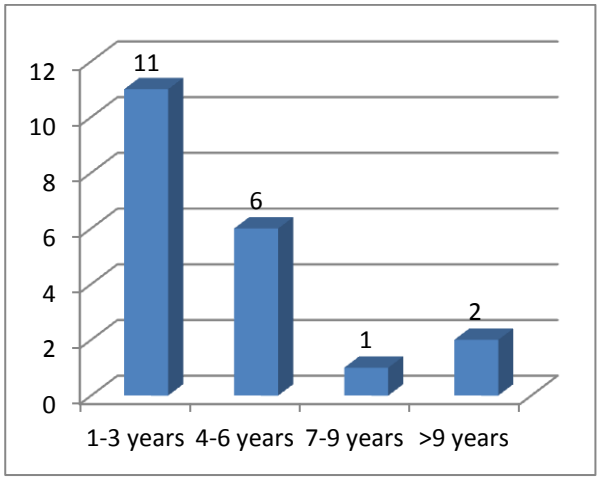


Table 5. Educational background

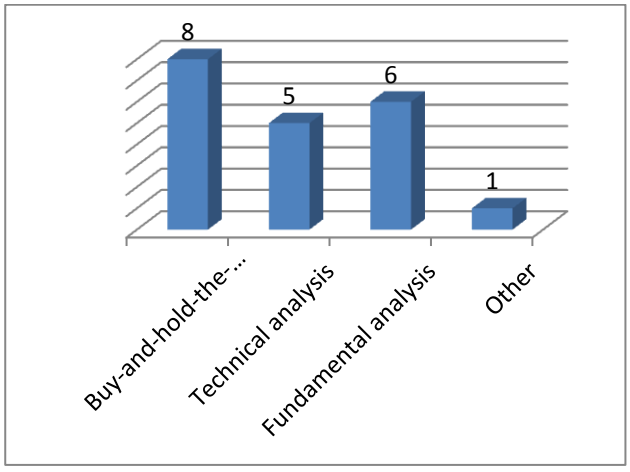
The first question of the respondent's investor profile concerned the investing experience of the participant in years. This information was used as a basis for respondent's general investor profile. As *Table 6.* illustrates, the majority of investors participating in the survey were relatively inexperienced. Only 3 respondents had 7 or more years of experience in stock investments. This equals to 15 per cent of all participants.



A total of 17 respondents had 6 or less years of experience in stock investments, which equals to 85 per cent of all the participants.

Table 6. Stock Investment Experience

The next investor profile question was the most crucial. Respondents identified their investment strategy and they were divided into different categories depending on their answer. These categories were used for finding the correlations between certain strategies and behavioural finance theories. Participants were divided into three major categories: 8 respondents had implemented a buy and hold strategy, 5 respondents used technical analysis and 6 relied on fundamental analysis. 1 respondent answered differentiation as his/her strategy. However, differentiation is not a valid investment strategy. It is one of the elements applied in all types of strategies in order to reduce portfolio volatility. The division of strategies among respondents was 40 per cent buy and hold, 25 per cent technical analysis, 30 per cent fundamental analysis and 5 per cent differentiation. The focus of the following section is on the three major groups described above. Ideally, the division of percentage between each strategy would be equal.



However, it is assumed that the division between these strategies is not equal in the real world. *Table 7.* illustrates respondents' answers to the question 5.

Table 7. Investment Strategy Division

The following question was the most informative concerning individual investors' irrational behaviour. The nine point chart tested participants' critical thinking when making investment decisions. The results of all the respondents are provided in *Table 8.*

	Totally agree	**Agree**	**Disagree**	**Totally disagree**
1. I often use information gained from news or magazines when making investment decisions	5	9	4	2
2. I feel public opinion about profit-making investment objectives is often correct	4	10	6	0
3. I mostly rely on company historical financial data when making investment decisions	2	10	8	0
4. I mostly rely on company recent financial data when making investment decisions	1	8	9	2
5. I value company recent information over historical one	1	9	8	2
6. I never make any investment decisions without consulting my investment advisor	0	2	10	8
7. I feel my friends/family have more knowledge about investing than I do	3	6	6	5
8. I prefer not to invest in stocks with high volatility	6	8	5	1
9. I tend to hold on to securities losing value waiting for better times	3	5	7	5

Table 8. Individual Investors' Critical Thinking

Herding Theory was tested in statements 1, 2, 6 and 7. Respondents strongly agreeing with these statements are probable to have herding tendencies. Responses stating '*totally agree'* on any of the questions are seen as a strong positive correlation on Herding Theory.

Anchoring Theory was tested in statements 3, 4, and 5. Respondents strongly disagreeing with statement 3 and agreeing with statements 4 and 5 are probable to have anchoring tendencies. Responses stating '*totally disagree*' on question 3 or '*totally agree*' on questions 4 or 5 are seen as a strong positive correlation on Anchoring Theory.

Prospect Theory was tested in statement 8. Respondents strongly agreeing with the statement are probable to have tendencies on evaluating investment opportunities differently depending on whether they are explained in terms of gains or losses. Responses stating '*totally agree'* on question 8 are seen as a strong positive correlation on Prospect Theory.

Regret Theory was tested in statement 9. Respondents strongly agreeing with the statement are probable to have regret tendencies. Responses stating '*totally agree'* on question 9 are seen as a strong positive correlation on Regret Theory.

The responses of the participants were interpreted by calculating the overall percentage of the investor group answers that had a positive correlation with a certain behavioural finance theory. The results of testing the correlation between Herding Theory and the three major investment strategies revealed that fundamental analysis and buy and hold strategy investors were more probable to be exposed to herding tendencies than technical analysis investors. 21 per cent of the fundamental analysis and 16 per cent of the buy and hold investors' replies to the four statements stated they are strongly affected by their external environment. Only 5 per cent of the technical analysis investors' replies demonstrated strong exposure for external environmental factors. Charts illustrating the responses of the three investor groups are provided in Appendix (D).

The responses of any of the investor groups did not refer to particularly strong anchoring tendencies. 10 per cent of the technical analysis, 6 per cent of the buy and hold and 0 per cent of fundamental analysis answers on statements 4 and 5 referred to strong anchoring tendencies. Statement 6 revealed none of the respondents strongly disagree with a hypothesis of relying on historical information. Charts illustrating the responses of each group in statements 4 and 5 are provided in Appendix (E). A figure demonstrating participants' answers in statement 6 is provided in Appendix (F).

According to the results gained from statement 8 fundamental analysis investors are the most risk-averse group. 33 per cent of the group's responses '*totally agree'* with the statement of avoiding high stock volatility. The overall results demonstrate that all the investor groups tested are unwilling to purchase stocks with major volatility. If the statement was made in terms of gaining profit instead of referring to volatility as a risk increasing element, the overall response to statement 8 is assumed to be more positive. Charts illustrating the responses of different investor groups are provided in Appendix (G).

The results of statement 9 suggest that buy and hold investors have the most obsessive tendency of holding on to stocks that are losing value. Overall, 75 per cent of the group's responses '*agree*' or '*strongly agree'* with the statement. In the fundamental analysis group the same number is 34 per cent. On the technical analysis group none of the respondents '*strongly agree'* and only 20 per cent '*agree*' with the statement. Appendix (H) provides charts illustrating the responses of each of these groups.

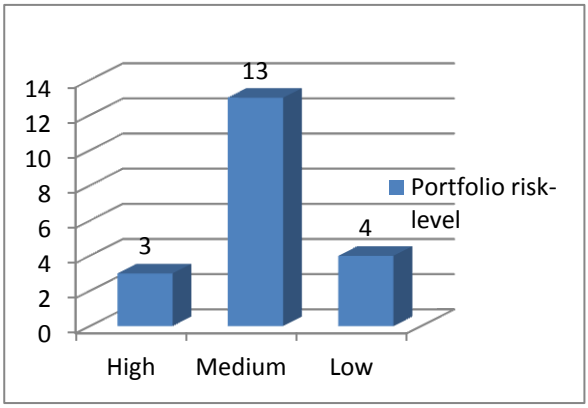


Table 9. Individual Investors Portfolio Risk-Level

In order to obtain a proper image of different investor groups' risk tolerance, the respondents were asked for their portfolio risk-level. The measurement of risk was left to each of the participants to determine.

Overall, only 15 per cent of the responses stated a high portfolio risk-level. 65 per cent of responses gave a neutral answer of medium risk-level and 20 per cent claimed having a low level of risk. The group with the highest risk-tolerance was technical analysis investors. 80 per cent of the group's answers stated to having a high or medium level of risk. 75 per cent of buy and hold investors tolerate medium or high risk. None of the fundamental analysis respondents stated investing with high risk. However, 83 per cent claimed to have a medium portfolio risk-level. Charts describing responses of each investor group are provided in Appendix (I). Combining the results of question 6 statement 8 and the results of question 7, provided above, support the assumption of fundamental analysis investors being the most risk-averse group.

Questions 8 and 9 measured respondents' reactions on hypothetical situations where their securities would lose and gain value. Question 8 was used to examine respondents' reactions on selling a value-losing security. Regret Theory was used for interpreting the results. One major phenomenon of Regret Aversion is investors' lack of motivation and tendency on avoiding certain industries after poor decision-making. The results did not reveal major statistical significance of one investor group losing their motivation over the others. The statistics of question 8 are provided in *Table 10* on the next page. 17 per cent of the fundamental analysis investors and 12 per cent of the buy and hold

investors claimed they will never purchase certain stocks again. All the respondents of the technical analysis group are convinced making losses will not change their investment decision-making behaviour. Charts describing the emotions of each group are provided in Appendix (J).

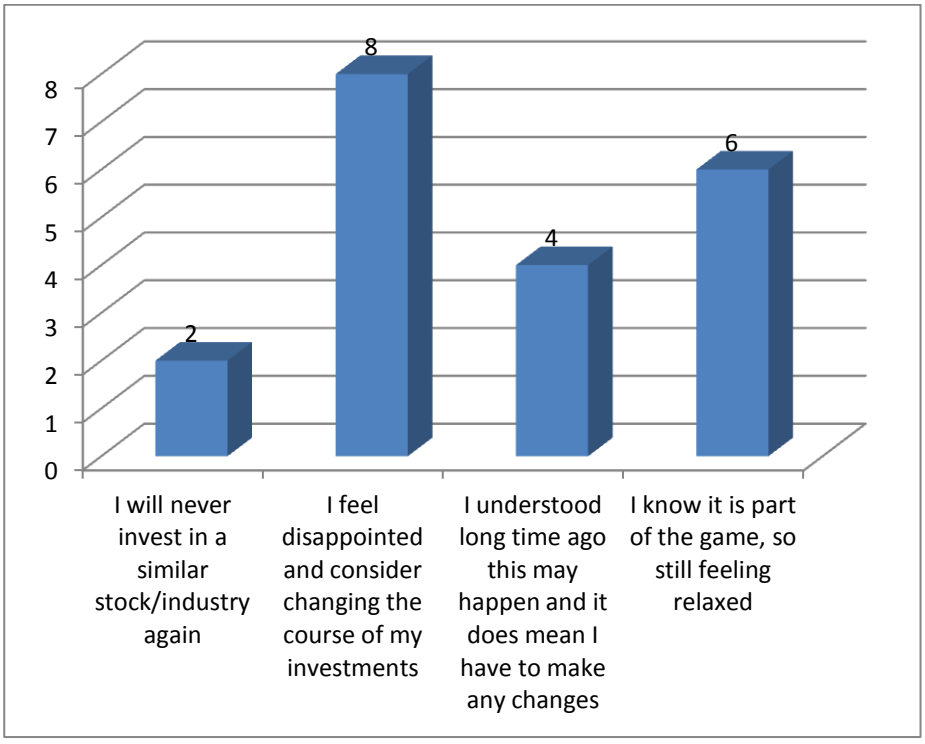


Table 10. Individual Investors Reactions on Unprofitable Stock Exchange

Question 9 was implemented to examine whether respondents place a different value on losses than on gains. Responses of questions 8 and 9 were compared to each other to investigate which occasion creates stronger emotions among investors. Prospect Theory was used for interpreting the results. *Table 11.* on the next page illustrates the participants' responses on question 9. According to tables 10. and 11. there is no significant statistical difference on investors' reactions on gaining and losing money. However, evaluating respondents according to their investment strategies reveals fundamental analysis investor emotions are stronger when selling unprofitable stocks than when selling profitable ones. 33 per cent of the fundamental analysis group feel satisfaction after profitable sales. None of the members would consider purchasing more similar stocks. It is notable that

50 per cent of the fundamental analysis investors would change the course of their investments or even decide not to invest in similar stocks again after a loss-making selling decision. This phenomenon refers to placing higher value on losses than gains. Charts illustrating each group's answers are provided in Appendix (K).

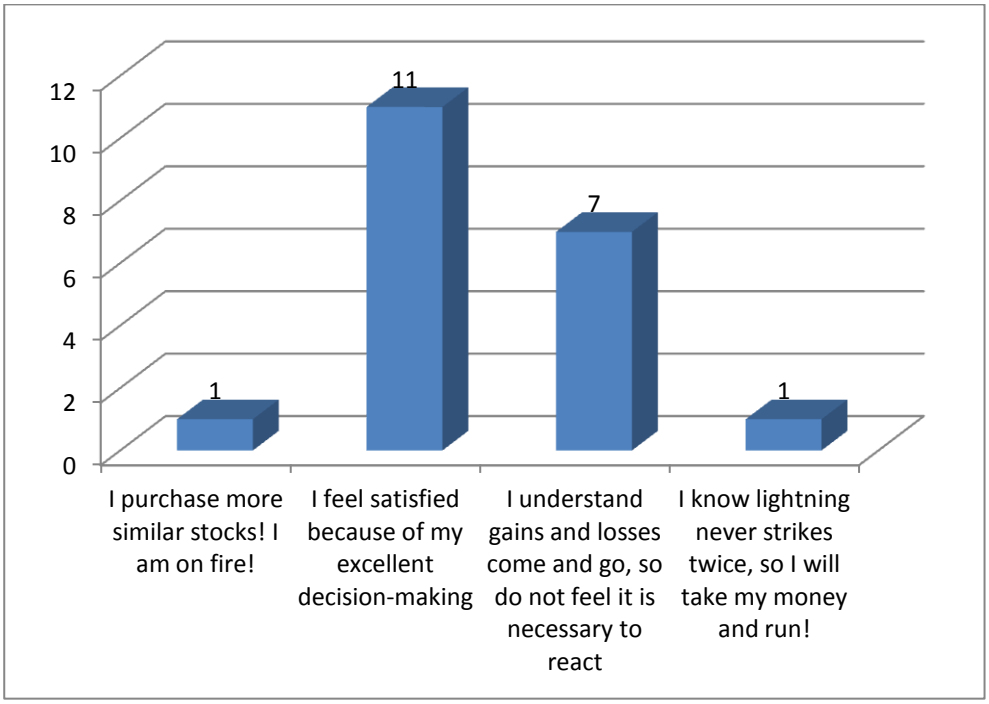


Table 11. Individual Investor's Reactions on Profitable Stock Exchange

The final question of the survey concerned participants' investment objectives. The purpose of the question was to evaluate the overall reliability and validity of respondents' answers. Only one respondent answered that investing is a tool for getting rich. The other 19 participants had a realistic view of their investment objectives. *Table 12.* on the next page demonstrates respondents' answers to question 10. Since participants had a realistic idea concerning their investment targets, it is logical to assume their answers reflect a true and fair view of each investment strategy group's decision-making.

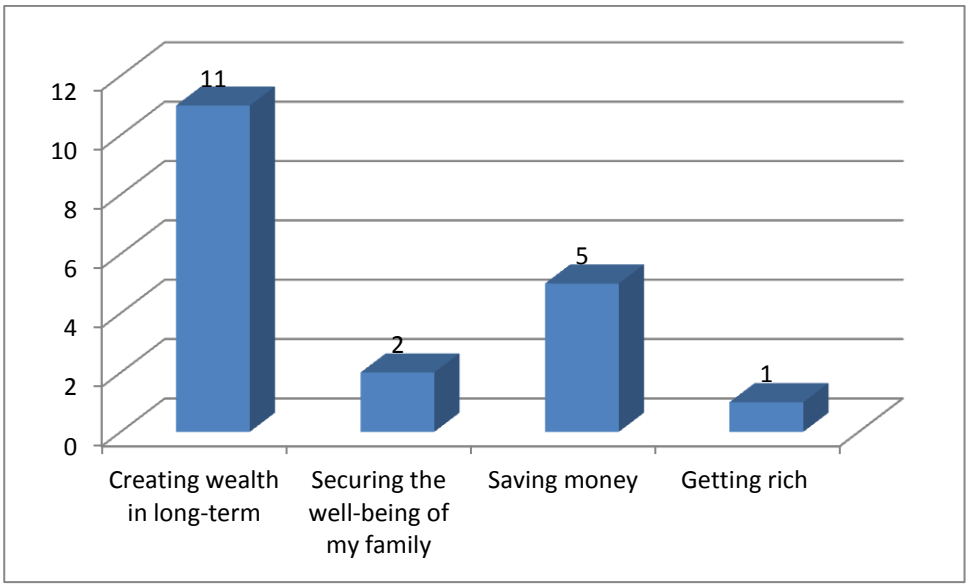


Table 12. Individual Investors Investment Objectives

4.3 Analyses of results

This section is dedicated to a critical discussion of the findings of this paper and the initial analysis they are based on, set against the existing literature discussed in Chapter 2. *Literature Review*. The main aim of this dissertation was to study the correlations between major stock investment strategies and the most common behavioural finance models affecting investor behaviour.

As stated in the *Literature Review*, the field of behavioural finance theories is comparatively new. Therefore, the amount of existing studies concerning behavioural finance theories correlation between investment strategies is limited and their reliability is questionable. The earliest studies of Cohen, Zinbart and Zeikel (1977) and Rutterford (1993) claimed there is no evidence of positive correlations between certain investment strategies and behavioural finance models. However, as Ranjit Singh (2009) claimed certain investor decision-making characteristics may be associated with certain investment strategies. He suggested using behavioural finance models to interpret these characteristics. Therefore, it is logical to assume that although a pattern between major investment

strategies and the most relevant behavioural finance models has not been researched, it does exist. The major investment strategies adapted to the survey were fundamental analysis, technical analysis and buy and hold.

The results of the survey revealed minor correlations between certain strategies and Herding, Anchoring, Prospect and Regret theories. Analyses of the results presented in the previous section are provided in *Table 13*.

Investment strategy	Behavioural finance theory positively correlated with	Explanation of the interpretation
Buy and hold	Regret theory	75 per cent of the responses in question 6 statement 9 demonstrated strong tendencies on regret.
Fundamental analysis	Herding theory	21 per cent of the responses in question 6 statements 1, 2, 6 and 7 demonstrated strong herding tendencies.
	Prospect theory	Responses in question 6 statement 8 and question 7 demonstrated strong risk-aversion tendencies. Responses in questions 8 and 9 demonstrated stronger emotions when losing than gaining money.
Technical analysis	No statistically significant correlation with any behavioural finance theory examined.	

Table 13. Correlations Between Major Investment Strategies and Behavioural Finance Theories

According to the survey, buy and hold investors have tendencies of regret behaviour. Fundamental analysis investors are probable to herd and be risk-averse at the moment of decision-making. The survey did not reveal a statistically significant correlation between technical analysis investors and a specific behavioural finance theory.

It is notable that characteristics of some investment strategies effect on the outcome of the survey. For example, the core idea of buy and hold investing is to hold on to securities for a long period of

time. The fluctuations of security value are therefore mitigated if the investor sells the stock at a higher price than at the purchasing moment. It is natural that buy and hold strategy investors have certain Regret theory related characteristics.

According to Lei Lu (2010) uneducated investors are probable to be abused by educated investors. Less-experienced investors have a tendency of herding, which distorts stock's market prices. Educated investors analyse stock prices based on the intrinsic value of the security. Andrei Shleifer (2000) suggested that poor decision-making may destroy individual investor's motivation in the long-term. The results of question 8, presented in the previous section, demonstrate that an individual investor is not probable to leave the market after a single unsatisfactory stock trading experience. However, the question does not examine investor's motivation in the long-term. Therefore, the option of investors losing their motivation may not be overruled.

Jing Chen (2011) proposed self-education of less-experienced investors as a method of mitigating the superior position of educated investors. Understanding the effect behavioural finance theories have on individuals' decision-making is essential in order to examine the gap between educated and uneducated investors. Formation of patterns between theories and real life experiences enhances the mitigation of the consequences on an individual and money market level. After conducting this essential study it may be possible to identify distortions on investor decision-making and examine options for avoiding the repetition of the irrational aspects leading to it.

4.4 Summary

In summary of this chapter, it is evident that certain patterns between Herding, Anchoring, Prospect and Regret theories and major investment strategies exist. The study revealed connections between buy and hold strategy and Regret Theory, and fundamental analysis and Herding and Prospect theories. The following chapter provides final conclusion to the paper and proposes further areas of research.

5.0 Conclusion

5.1 Introduction

The core aim of this paper was to study whether there are any positive correlations between major stock investment strategies and behavioural finance theories. Relevant theories used in this paper were chosen after a careful research of behavioural finance related books and journal articles. The behavioural finance models implemented were Herding Theory, Anchoring Theory, Prospect Theory and Regret Aversion.

In order to achieve the main aim, the study was divided into three objectives. The first objective was to reveal the main issues of individual investors and examine whether they may be explained with the four behavioural finance theories mentioned above. The second objective was to expose the consequences of individual stock investors being affected by behavioural finance models. The examination of this objective was divided into a money market and an individual investor perspective. The third objective was to study whether there are any correlations between major stock investment strategies and behavioural finance theories. There are major gaps in the research in this area of behavioural finance. The author conducted a 10 question survey on the *Investor Posts* web page in order to find the possible associations between investment strategies and behavioural finance theories. The following section presents a summary of the key findings.

5.2 Summary of the study

Examining the first objective revealed that the majority of authors of relevant journal articles and books used behavioural finance theories to interpret individual investor issues. *Table 14.* on the next page links major investor issues and the theories used for interpreting them.

Investor Issue	Behavioural finance theory
Impatience, excessive trading of securities, "chasing returns" Relying on other investors decision-making Relying on invalid informational sources	Herding Theory
Inability to utilize information Valuing recent information over historical	Anchoring Theory
Holding on to value-losing securities and selling profitable ones	Regret Theory
Valuing certain opportunities different depending on how they are expressed	Prospect Theory

Table 14. Individual Investor Issues and Their Relation on Behavioural Finance Theories (Polak, 2012; Chang and Wei 2010; Finkelstein and Greenwald 2009; Singh R., 2009; Singh S., 2012; Welch, 2000)

The study of the second objective was divided into two parts: behavioural finance model's effect on money markets and on individual investors. Closer examination showed irrational investor behaviour causes distortions in means of stock price bubbles (Hott, 2009), market inefficiencies (Lawlor, 2009) and chains of misleading information compounding the impact of behavioural finance models (Welch, 2000). On an individual level, investors strongly affected by behavioural finance are at risk of losing their motivation in the long-term (Shleifer, 2000). It is also evident that experienced investors benefit from trading with inexperienced ones (Lu, 2010).

The third objective, and the overall aim of this paper, was to examine the correlations between major stock investment strategies and behavioural finance theories. Existing researches do not cover this field of study. The survey conducted on the *Investor Posts* web page demonstrated minor positive correlations between two of the major investment strategy categories and behavioural finance theories. The most statistically significant finding was the buy and hold investors' association with Regret Theory. 75 per cent of the groups responses on the Regret Theory related statement were

attached to regret tendencies. However, it is to be noted that the investment practice of this group is naturally related to certain aspects of Regret Theory.

Other significant discoveries were fundamental analysis investors' positive correlations with Herding and Prospect theories. 21 per cent of the group's responses on Herding Theory related questions demonstrated strong herding tendencies. Fundamental analysis investors also had stronger emotions towards losing than towards gaining money. This phenomenon is linked to Prospect Theory. The survey did not reveal any statistically significant correlations between technical analysis investors and a specific behavioural finance theory.

There are no previous studies that link behavioural finance theories to certain investment strategies. The interpretation of the survey is based on the author's view of forming a pattern between behavioural finance models and certain strategies. The results of the survey are to be treated as a guideline.

5.3 Implications of findings

The research done in this dissertation provided areas of focus and development for uneducated individual investors in order to make successful investment decisions in the future. It suggested self-education as a form of mitigating irrational aspects of one's decision-making. Accordingly, it provided knowledge for experienced investors regarding the weaknesses of inexperienced ones. It suggested certain models for experienced investors to benefit from trade with inexperienced ones.

The study conducted in this paper reinforced the position of behavioural finance theories used as a tool to interpret money market anomalies that cannot be explained with EMH. It also provided future guidance on the examination of the connections between behavioural finance theories and investment strategies.

5.4 Direction for further research

The logical approach for continuing the research would be to more closely examine the association of buy and hold strategy and Regret Aversion. Accordingly, studying the correlation between fundamental analysis investing and Herding and Prospect theories is essential in order to form permanent patterns. As has been stated, the survey conducted in this paper represents a sample of 20 investors. Therefore, further research on the aim of this paper is essential.

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Appendix:

(A) Terminology

Economic bubble, price bubble: A theory explaining the difference between fundamental value of security prices and their market value.

Money market: A sub-section of financial market where securities with characteristics of high liquidity and commonly short maturity are traded.

Behavioural finance theories, behavioural finance models: Studies of finance proposing psychological patterns to explain the difference between actual and fundamental values of securities.

Individual investor, small investor: An individual purchasing minor amounts of securities for personal purposes.

Uneducated investor: A person purchasing money market securities lacking professional education on investing. Self-education on investing is not acknowledged as professional education in this context.

Investment strategy: A plan implemented to be used as a guide on investment decisions.

Buy-and-hold-the-market strategy: A passive investment strategy applied by purchasing securities and holding them for a long period of time in order to mitigate the volatility characteristics.

Technical analysis strategy: A method for valuing securities based on their past performance on the market. Actual analysis is not based on security's intrinsic value. The analysis is formed based on the security's historical market value.

Fundamental analysis strategy: A method for valuing securities based on all the relevant quantitative and qualitative information available. The attempt is on evaluating security's intrinsic value by examining all the factors affecting on it.

(B) Survey on Stock Investors Investment Behaviour

The questions marked with * are mandatory.

Socio-demographic profile

Question 1. In any survey it would be ideal to receive 50 per cent of the responses from male and 50 per cent form female participants. Naturally, a multiple choice response category with two options is the most common form of asking this question.

1. What is your gender?

- Female
- Male

Question 2. Respondent's age was an important determinant on evaluating participant's stock investment experience and the possible amount of time one may have used for self-education. It also provided information of the maturity of the participants. Adapting a multiple choice response category provided a clear ratio of the age division of the respondents.

2. What is your age?

- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 or older

Question 3. Respondent's profession was a crucial factor in order to ensure none of the respondents had professional investment background. An open-ended response category gave all the participants an equal opportunity to provide their educational information.

3. What is your profession? (e.g. Teacher, Doctor) *

(_____)

Investor profile

Question 4 determined respondent's investment experience in years. Ideally, the research would have only attracted investors with less than 3 years of experience as they are probable to be highly exposed for irrational behaviour. The question also measured respondent's discretion. The results were compared with question 2 to ensure participant was providing valid answers to the survey. A multiple choice category provided a guideline of participant's experience. Detailed information was not needed at this stage.

4. For how long have you been investing in stocks? *

- 1-3 years
- 4-6 years
- 7-9 years
- >9 years

Question 5 was the most crucial in the survey. It divided respondents into different categories according to their answers. These categories were used to find the correlations between behavioural finance theories and major investment strategies. Respondents were given three options the author sees as the three major investment strategy options. They were also provided an opportunity to fill

in their own response, if they felt not belonging to any of the categories provided or were not sure of the category they are in.

5. What type of investment strategy have you implemented? *

- Fundamental Analysis
- Technical Analysis
- Buy-and-Hold-the-Market
- Other (_____)

Question 6 provided the major part of the information used to search for correlations between behavioural finance theories and major investment strategy categories provided in question 5. The response category adapted was a matrix of choices as respondents were expected to have different levels of emotions towards different statements.

6. Please qualify the following statement… *

	Totally agree	Agree	Disagree	Totally disagree
1. I often use information gained from news or magazines when making investment decisions				
2. I feel public opinion about profit-making investment objectives is often correct				

3. I mostly rely on company historical financial data when making investment decisions

4. I mostly rely on company recent financial data when making investment decisions

5. I value company recent information over historical one

6. I never make any investment decisions without consulting my investment advisor

7. I feel my friends/family have more knowledge about investing than I do

8. I prefer not to invest in stocks with high volatility

9. I tend to hold on to securities losing value waiting for better times

Question 7 was associated with question 6 statement 8 in order to gain knowledge of respondent's risk tolerance. These questions were interpreted using Prospect Theory. The risk-level of portfolio is practical to divide in three stages. Therefore, the response category used was a multiple choice.

7. What is the risk-level of your portfolio?*

- High
- Medium
- Low

The results of questions 8 and 9 were compared to each other in order to analyse whether respondent's react stronger on losses or gains. The results of these questions were interpreted using Prospect and Regret theories. Adapting a multiple choice response category was essential to receive comparable results.

8. How do you react on making losses?*

- I will never invest in a similar stock/industry again
- I feel disappointed and consider changing the course of my investments
- I understood long time ago this may happen and it does mean I have to make any changes
- I know it is part of the game, so still feeling relaxed

9. How do you react on gaining money?*

- I purchase more similar stocks! I am on fire!
- I feel satisfied because of my excellent decision-making
- I understand gains and losses come and go, so do not feel it is necessary to react
- I know lightning never strikes twice, so I will take my money and run!

Question 10 determined respondent's level of maturity. The core purpose was to ensure the participant had taken the questionnaire seriously and that he/she has a realistic view of the objectives of his/her investment strategy. This question guaranteed the validity of respondent's answers. Participants' were provided options as a guideline of the purpose of the question. They were also given an opportunity to determine their own investment objective.

10. What is the core purpose of investing to you?

- Creating wealth in long-term
- Securing the well-being of my family
- Saving in order to purchase something special in the future
- Getting rich ASAP
- Other, please specify (_____)

Appendix (C) Cover Letter

Hi everyone!

I'm a final year business student. My dissertation topic is concerning investment strategies. It would really help me a lot if you would use a couple of minutes of your time and answer the survey below!

http://www.surveymonkey.com/s/LMKYXQQ

Thank you for all the respondents in advance!

Appendix (D) Correlations of Major Investment Strategies and Herding Theory

*Interpretation: *'Totally agree'* is reflected on strong herding tendencies

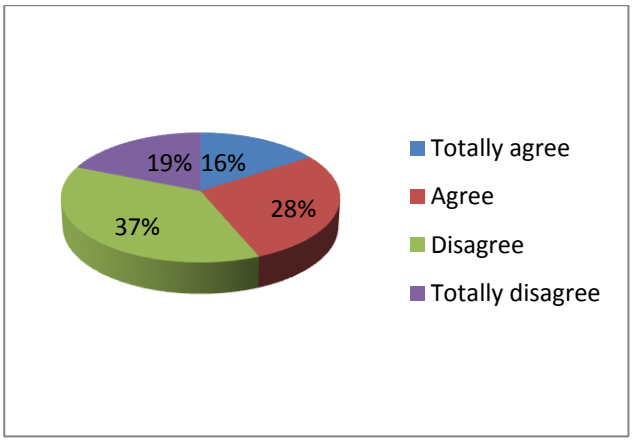

Chart D.1 Correlation of Buy-and-hold-the-market and Herding Theory

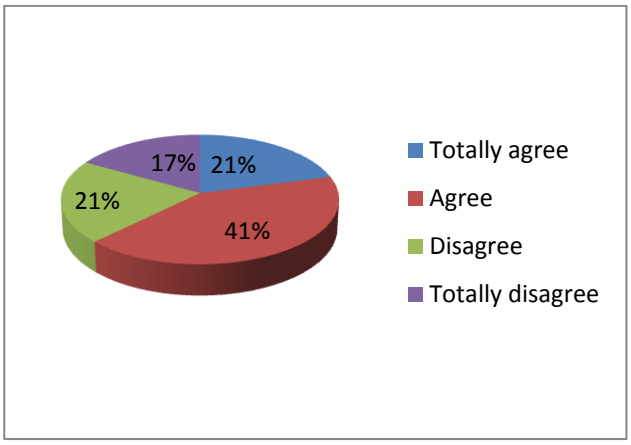

Chart D.2 Correlation of Fundamental Analysis and Herding Theory

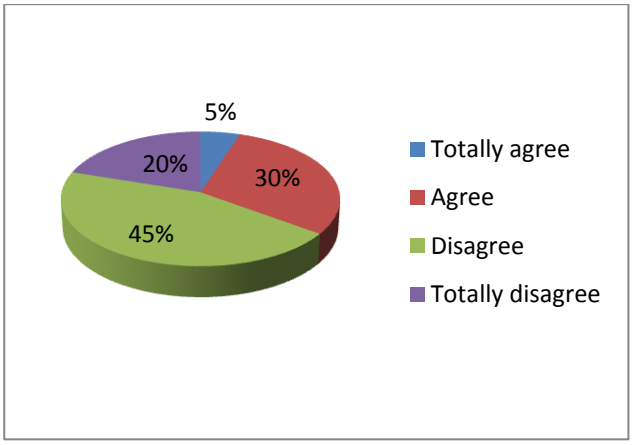

Chart D.3 Correlation of Technical Analysis and Herding Theory

Appendix (E) Correlations of Major Investment Strategies and Anchoring Theory

*Interpretation: '*Totally agree'* is reflected on strong anchoring tendencies

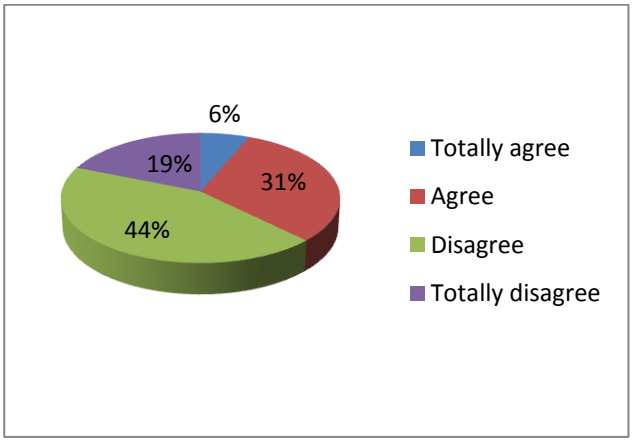

Chart E.1 Correlation of Buy-and-hold-the-market and Anchoring Theory

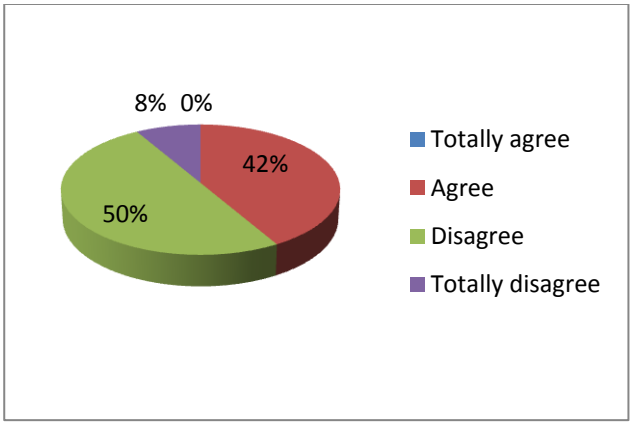

Chart E.2 Correlation of Fundamental analysis and Anchoring Theory

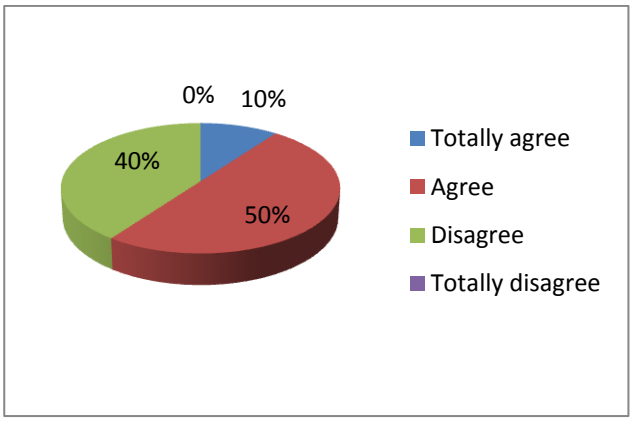

Chart E.3 Correlation of Technical analysis and Anchoring Theory

Appendix (F) Correlations of Major Investment Strategies and Anchoring Theory

*Interpretation: '*Totally disagree'* is reflected on strong anchoring tendencies

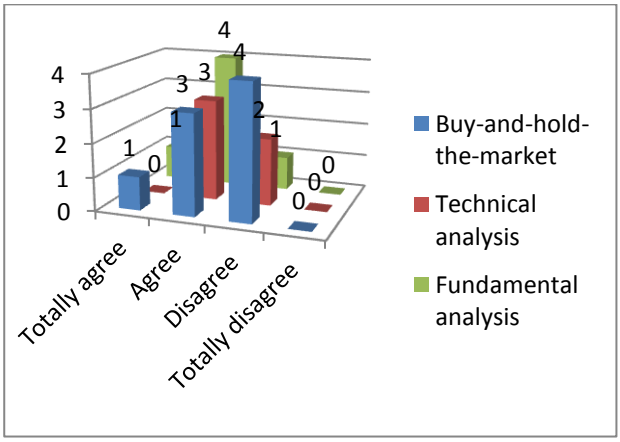

Chart F.1 Correlations of Major Investment Strategies and Anchoring Theory

Appendix (G) Correlations of Major Investment Strategies and Prospect Theory

*Interpretation: '*Totally agree'* is reflected on risk-aversion and willingness to accept risks only in order to prevent losses

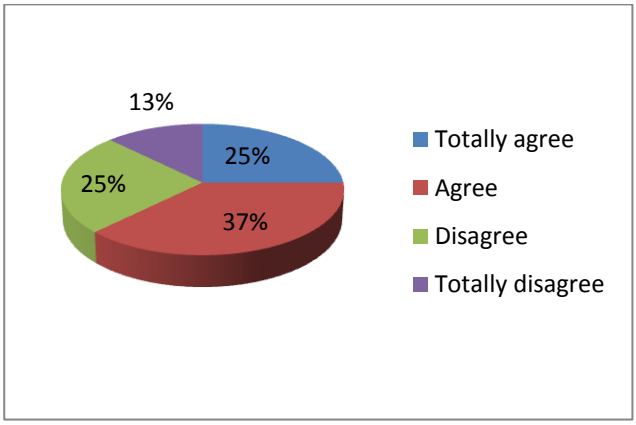

Chart G.1Correlation of Buy-and-hold-the-market and Prospect Theory

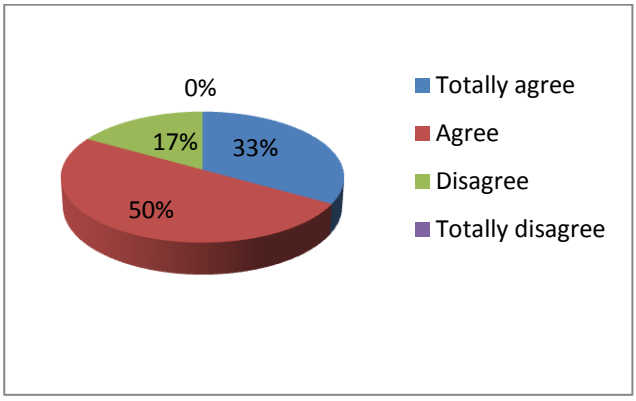

Chart G.2 Correlation of Fundamental analysis and Prospect Theory

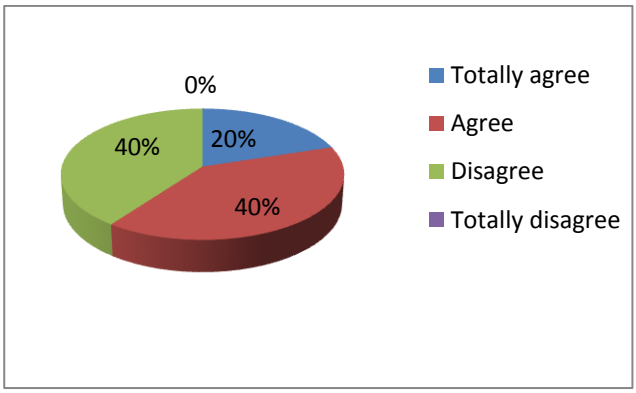

Chart G.3Correlation of Technical analysis and Prospect Theory

Appendix (H) Correlations of Major Investment Strategies and Regret Theory

*Interpretation: '*Totally agree'* is reflected on regret tendencies

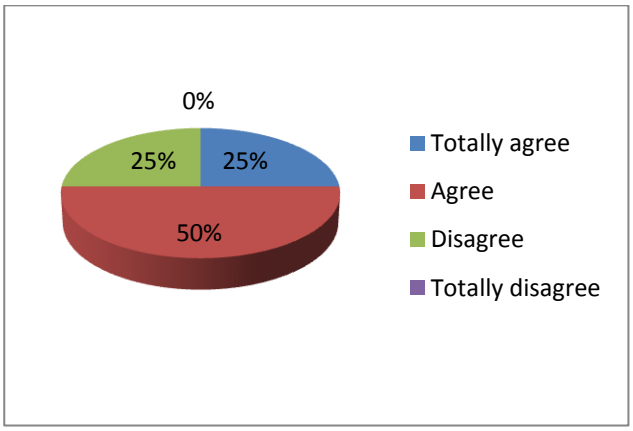

Chart H.1Correlation of Buy-and-Hold-the-Market and Regret Theory

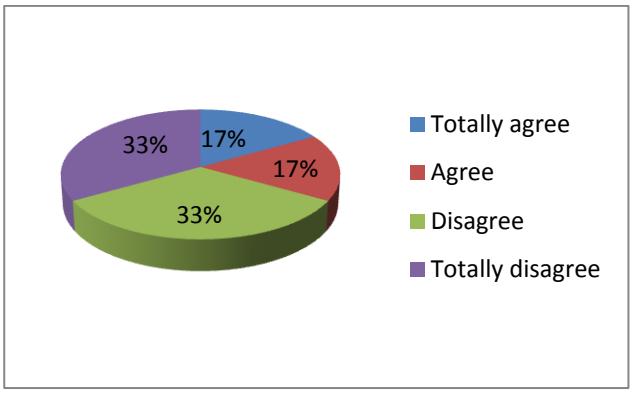

Chart H.2 Correlation of Fundamental Analysis and Regret Theory

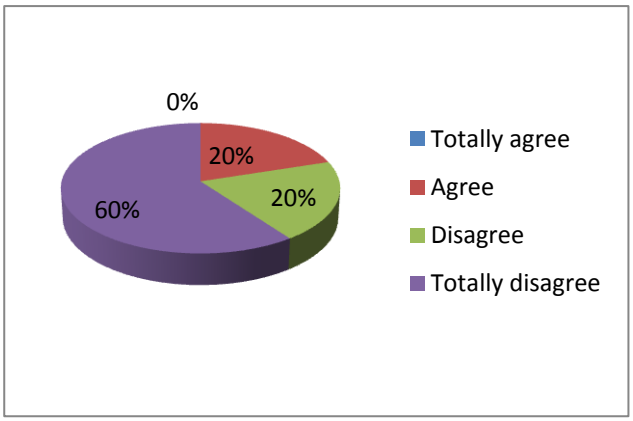

Chart H.3 Correlation of Technical Analysis and Regret Theory

Appendix (I) Risk Tolerance of Different Investor Groups

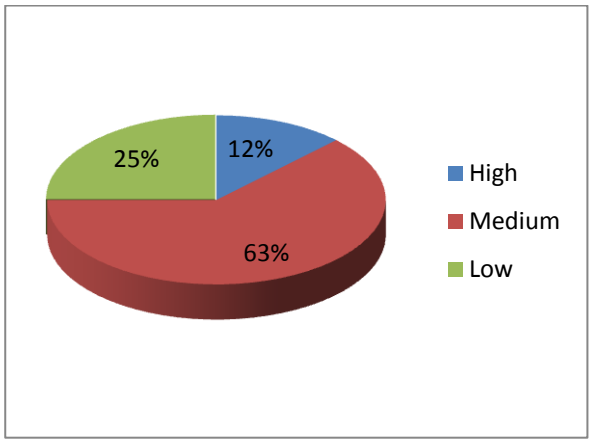

Chart I.1 Buy-and-hold-the-market Investors Portfolio Risk-level

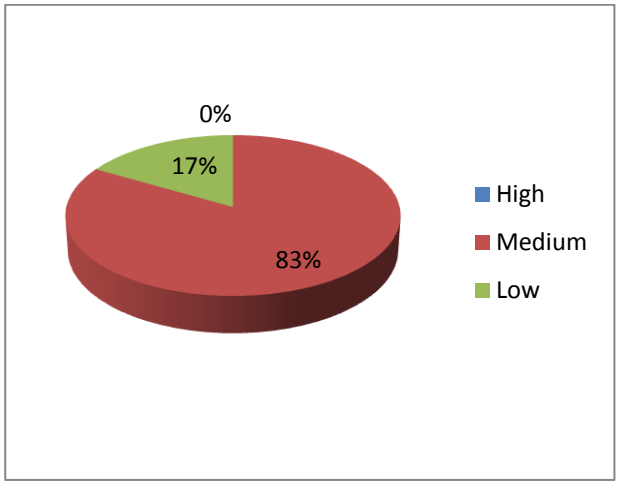

Chart I.2 Fundamental Analysis Investors Portfolio Risk-level

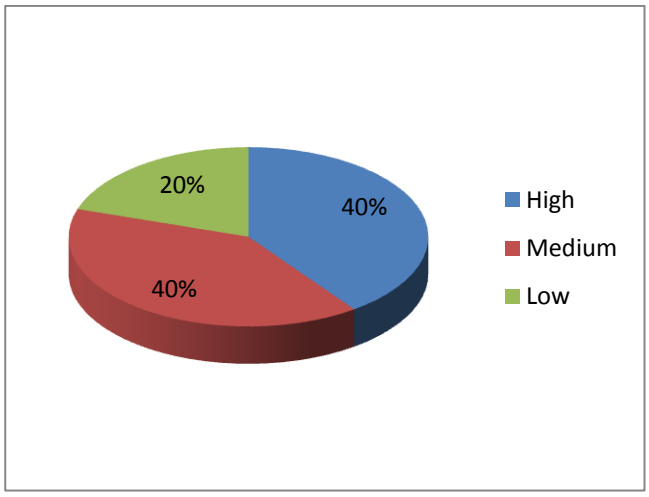

Chart I.3 Technical Analysis Investors Portfolio Risk-level

Appendix (J) Reactions on Unprofitable Decision-making of Different Investor Groups

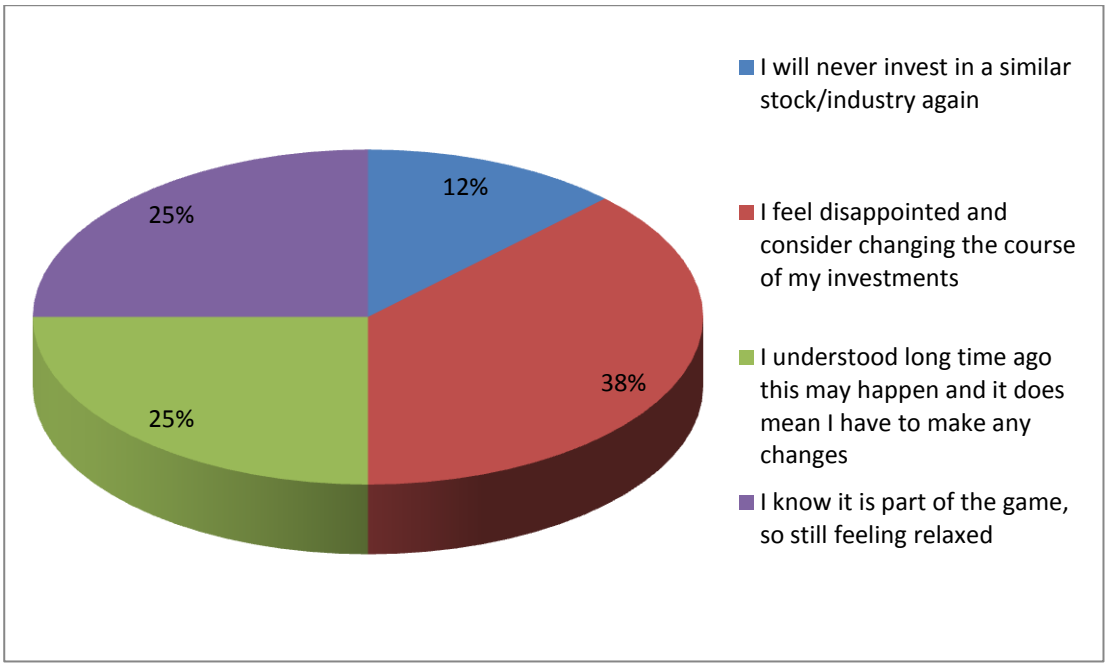

Chart J.1 Buy-and-hold-the-market Investors Reactions on Unprofitable Decision-making

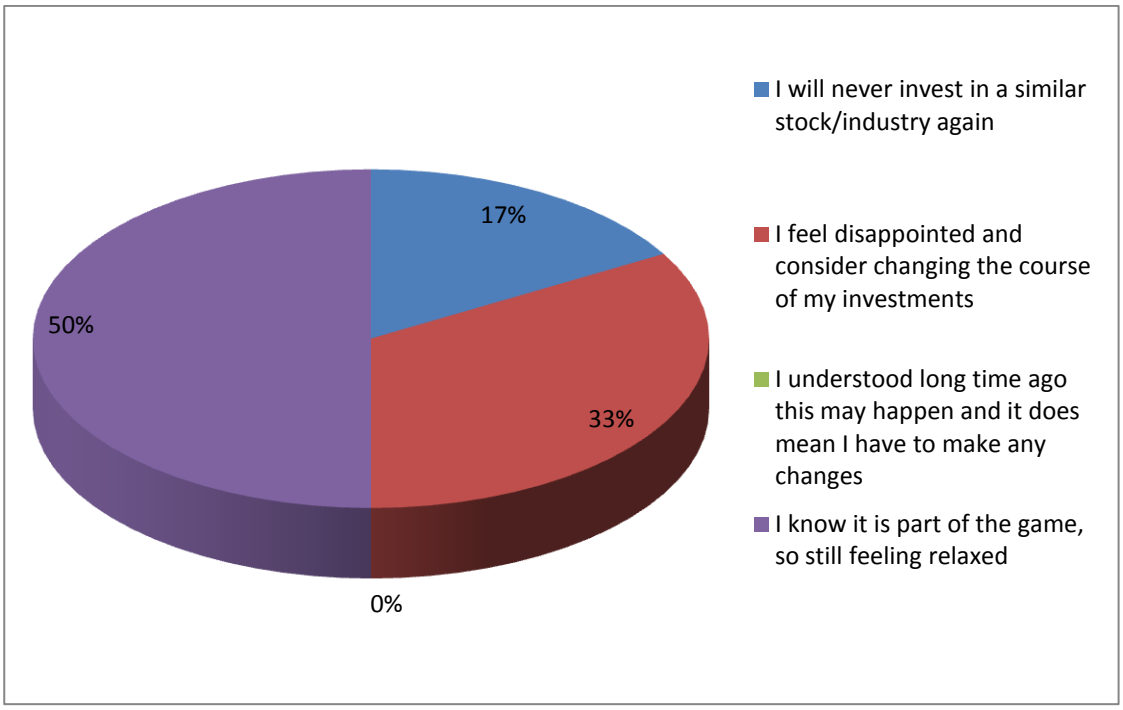

Chart J.2 Fundamental Analysis Investors Reactions on Unprofitable Decision-making

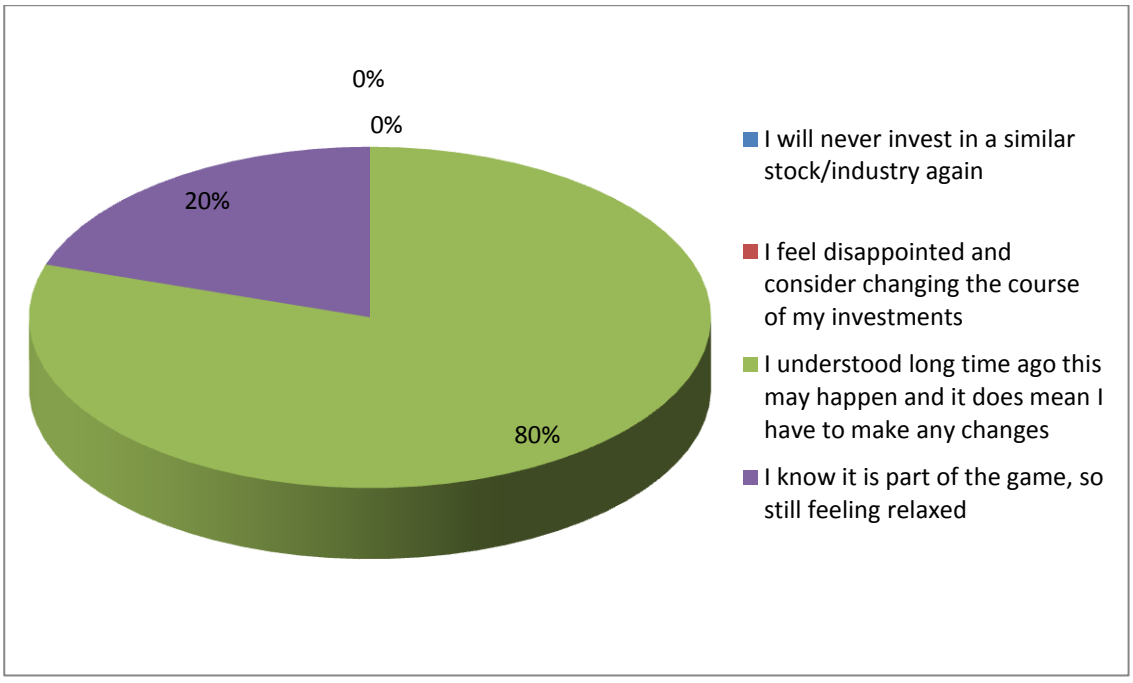

Chart J.3 Technical Analysis Investors Reactions on Unprofitable Decision-making

Appendix (K) Reactions on Profitable Decision-making of Different Investor Groups

*Interpretation: Stronger emotions of a group on losing than gaining money are result to exposure for Prospect Theory. Compare with Appendix (J).

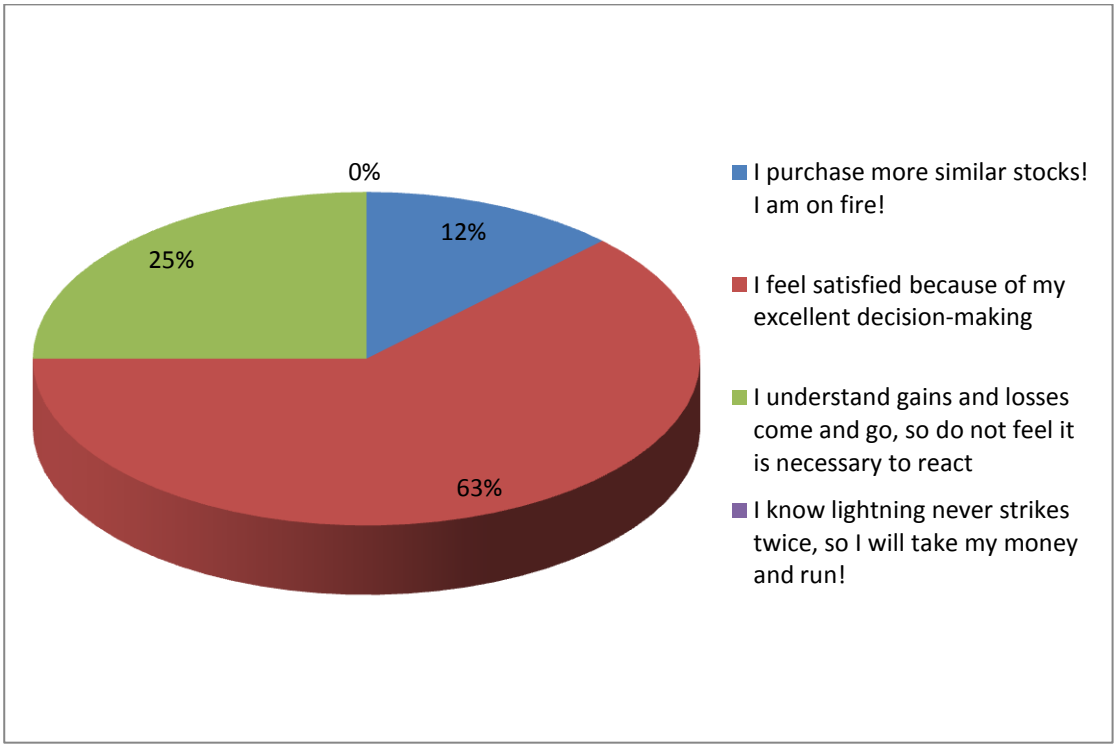

Chart K.1 Buy-and-hold-the-market Investors Reactions on Profitable Decision-making

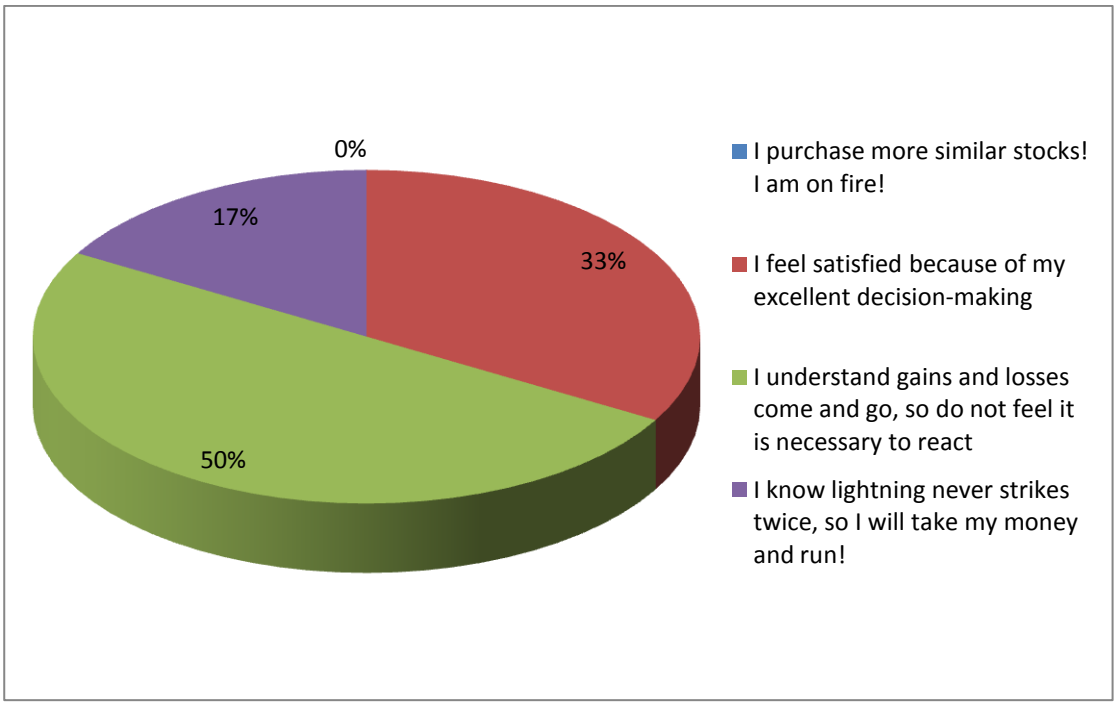

Chart K.2 Fundamental Analysis Investors Reactions on Profitable Decision-making

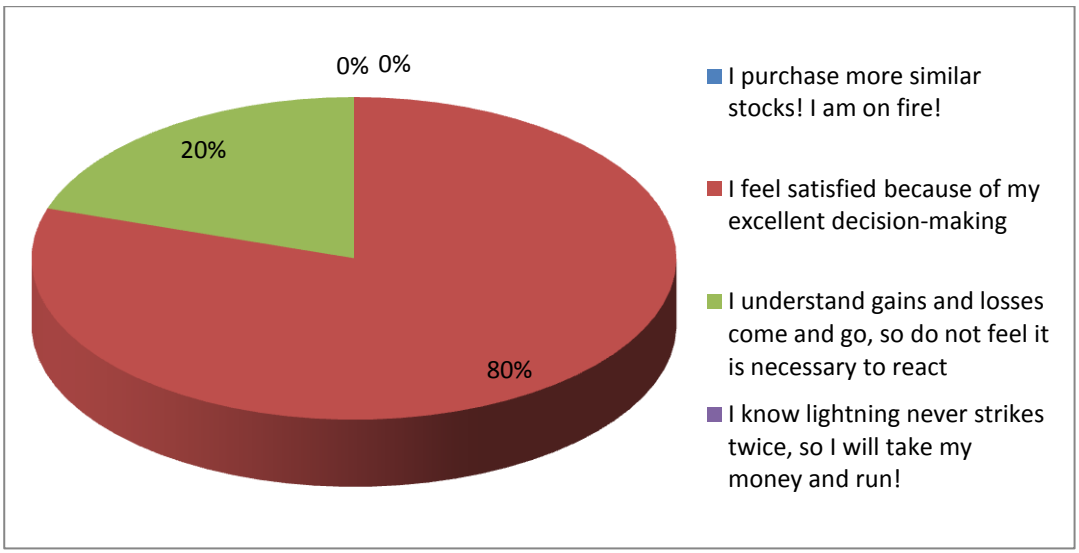

Chart K.3 Technical Analysis Investors Reactions on Profitable Decision-making